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ABSTRACT

Accurate as of October 1975, the guidebook establishes detailed procedures and policies to be used by all persons engaged in white water rafting trips involving students from Jefferson County (Colorado) Public Schools, and provides a general guide and set of instructions for anyone planning and carrying out such a trip. The guidelines are drawn from the latest state and federal information available, from the Colorado Outward Bound School, and from the knowledge of many experienced river rafting supervisors. The guidebook provides secondary school staff members who sponsor river rafting activities with minimum safety and sanitation standards (safety restrictions, first aid treatment, emergency procedures, hand and dish washing, food and drinking water preparation and storage, waste disposal). Information and checklists regarding the kind, use, and care of all required equipment are included. The book presents full instructions for five suggested environmental activities, a sample activity timetable for a 5-day trip, and instructional sequences for teaching rafting skills. Organizational material includes a preparatory checklist and time schedule, staff criteria, sample menus, a reading and reference list, and detailed information about the condition of several Colorado rivers and their environments. (SB)

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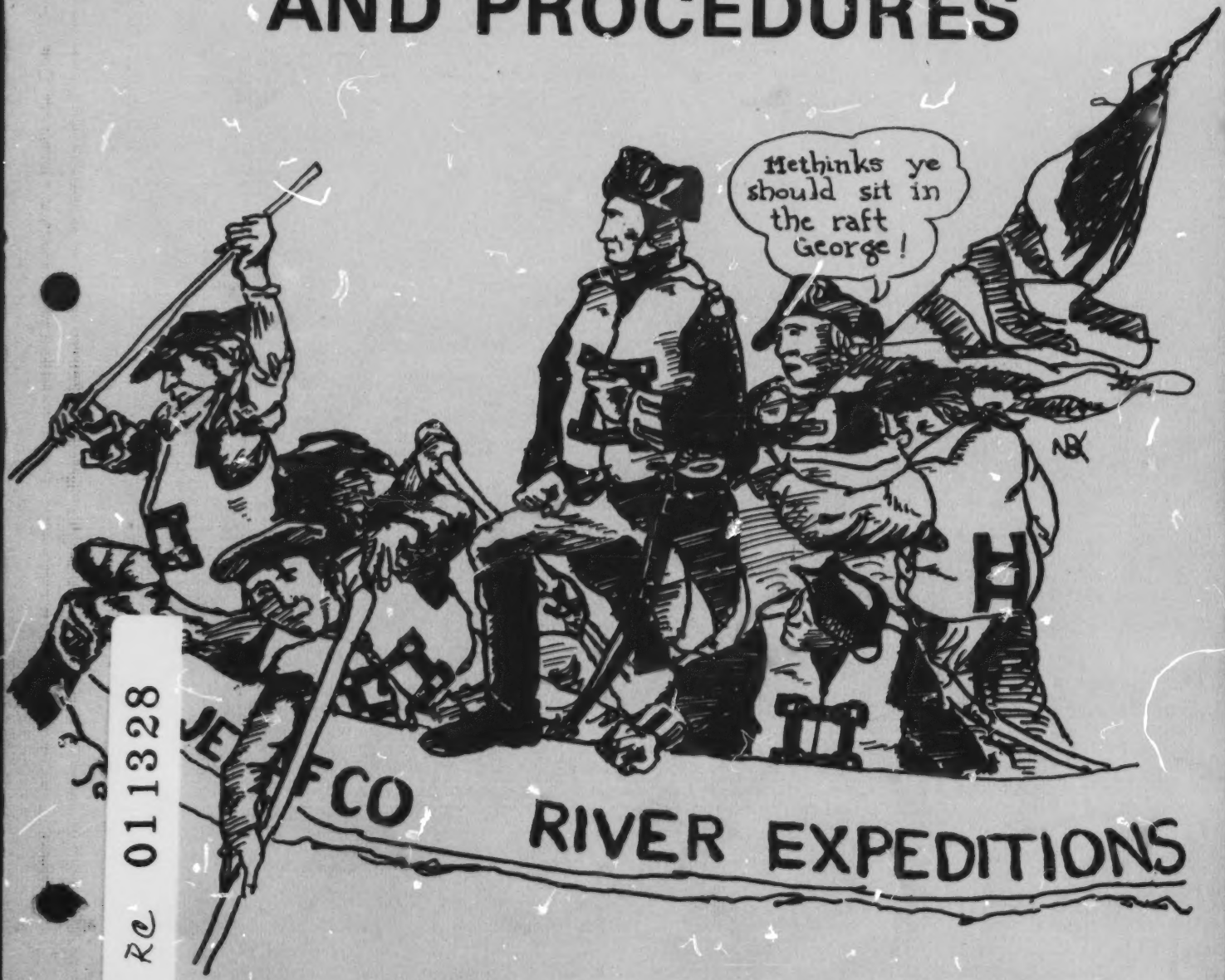
RIVER POLICY AND PROCEDURES



JEFFCO RIVER EXPEDITIONS

Re 01 13328

ENVIRONMENTAL EDUCATION

RIVER POLICY

AND

PROCEDURES

SECOND DRAFT
November 1975

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FOREWORD

This guide has been prepared to provide secondary school staff members who sponsor river rafting activities with minimum safety standards, required equipment and suggested activities to be followed on these educational trips. The safety of students must be a constant concern of teachers who assume the responsibility of conducting students in these stressful and adventurous activities. The guidelines published here have been drawn from the latest information available from federal and state agencies as well as the collective wisdom of a number of experienced river rafting supervisors.

It must be emphasized that teachers who serve as trip leaders must have the approved training, experience and certificate to qualify as a River Specialist before conducting the kind of educational trip referred to here. In addition, any river trips conducted under the auspices of the Jefferson County Public Schools must be done with the prior knowledge and approval of the principal and the Environmental Education Coordinator.

William D. White
Director of Program Planning and Development

- ACKNOWLEDGMENTS -

Glenn Snyder's experience with river rafting on a commercial basis and with Jefferson County Schools is extensive. Glenn, science teacher at Wheat Ridge High School, has drawn upon his years of personal experience, the experience of Colorado Outward Bound School, and regulations for the Grand Canyon National Park and Dinosaur National Monument, in helping compile this guide. A special thank you goes to Glenn for his contributions to the River Rafting Program of Jefferson County.

Shawn Crocker, science teacher at Bear Creek High School, and Lew Buckingham, language arts teacher at Bear Creek High School, developed and tested the environmental activities.

A. Mary Michael, physician for Jefferson County Schools, contributed to the "First-Aid and Procedures" section of the guide. The first-aid kit contents were taken from river rafting regulations of Grand Canyon National Park. Mr. Gary Lindstrom, Chief of Security for Jefferson County Schools, has reviewed the safety procedures recommended in this document.

Members of the River Trip Advisory Committee also assisted in developing policy and procedures. They include the following:

Richard Barton	Alameda Senior
Bob Hansen	Alameda Senior
Rod Stor	Arvada Senior
George Betts	Arvada West Senior
Lew Buckingham	Bear Creek Senior
Shawn Crocker	Bear Creek Senior
Gerry Difford	Central Services
Harold Pratt	Division of Instruction
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Allan Snyder	Green Mountain Senior
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Jim Hodges	Lakewood Senior
Mark Onesty	Lakewood Senior
Jill Marmelzat	Lakewood Senior
Larry Ottle	Pomona Senior
Jack Stout	Pomona Senior
Glenn Snyder	Wheat Ridge Senior

Portions of this booklet were revised from the Colorado Outward Bound School River Rafter's Manual by Mark Leachman, 1972.

The material on Sanitation Guidelines - Communicable Disease, Equipment and Procedures and Sanitary Procedures is reproduced from Guidelines for Communicable Disease Control on Colorado River Expeditions, by Arizona Department of Health Services, Bureau of Communicable Disease Control, 1740 West Adams Street, Phoenix, Arizona, 85007, and carries the force of law on the Colorado River and its tributaries.

Equipment specifications and regulations have been excerpted from current regulations in force in the Grand Canyon National Park and Dinosaur National Monument.

The material contained herein is accurate as of October, 1975, but since regulations change occassionally, it would be wise to consult appropriate agencies regarding current regulations.

The manuscript was typed and proofread by Betty Hess, secretary, Environmental Education Department.

I wish to extend a thank you to all these people for their contributions to the river rafting program in Jefferson County.

B. J. Meadows
Coordinator
Environmental Education

- INDEX -

Forward

I. Introduction 5

II. Responsibilities of Environmental Education Department 6

III. Responsibilities for Implementation 6

IV. Purpose and Objectives 7

V. Equipment 8

A. First-Aid and Emergency Equipment 9
B. Camping and Boating Equipment 13
C. Individual Equipment 15

VI. Sample Medical Information and Release Form 18

VII. Pre-Trip Preparations 19

VIII. Roles of River Staff 21

IX. Environmental Activities for the Trip 23

X. Check-in and Equipment Issue 30

XI. Camp Craft 31

XII. Sanitation 32

A. Communicable Disease: Causes, Transmission and Control 33
B. Equipment and Facilities 37
C. Sanitary Procedures 40

XIII. Raft Inflation and Preparation 44

XIV. Instructional Sequence 45

A. Prior to embarking on river 45
B. On the river 46

XV. Daily Care of Boat 48

XVI. Ending the Trip 48

XVII. Safety Procedures 49

XVIII. Emergency Procedures 51

XIX. So Now You Want to Run a River..... 53

INDEX (Continued)

XX. Rafting Instructor Criteria 61

XXI. River Specialist Criteria. 63

XXII. Suggested References and Reading List. 64

XXIII. Information on Rivers. 68

XXIV. Incident Report Form 73

I. INTRODUCTION

The first general program objective for environmental education states that there is a need to provide students with experiences that will enable them to explore components and interrelations in a variety of environments and will enable them to develop their own environmental preferences and value systems. The river environment is one such environment that provides students with this opportunity.

River trips have been a part of high school activities in Jefferson County since 1968. To date eleven high schools and two junior high schools have participated in a river rafting program.

Since the river environment is one that most people don't experience on a regular basis, it is important that the leaders of each trip be well qualified and use the right kind of equipment. The risks of the river environment may be minimized and the safety maximized by following the procedures in this guide.

In the back of this guide are activities which will help student become more aware of the river environment. Leaders of each trip need to incorporate these activities (or similar ones) into their trip plans.

II. RESPONSIBILITY OF THE ENVIRONMENTAL EDUCATION DEPARTMENT

Responsibilities of the Environmental Education Office in relation to the County River Rafting Program are as follows:

1. Qualification of teachers to be river rafting instructors and river specialists through a staff training program.

   a. Compilation of list of qualified teachers who have met county specifications.

   b. Distribution of list to principals of high schools and specified junior high schools.

2. Compile River Policy and Procedures Guide

   Distribute the guide to all high schools and specified junior high schools

3. Obtain permits and distribute trips fairly among the high schools in the District.

4. Communicate District River Policies as outlined in River Policy and Procedures Guide to principals. Principals will have the final responsibility for seeing that the trips taken from their schools meet the standards specified in the guide.

5. Personnel of the Environmental Education Office will be available to answer questions pertaining to all District river trips.

III. RESPONSIBILITIES FOR IMPLEMENTATION

NOTE: Principals will have the final responsibility for seeing that the trips taken from their schools meet the standards specified in the guide.

IV. PURPOSE AND OBJECTIVES

Purpose:

The purpose of this guide is to set down procedures and policies to be used by all persons engaged in white-water river rafting trips involving students in any of the Jefferson County Public Schools. It should also serve as a guide and instructions for persons planning and carrying out such trips.

Objectives:

The objectives of river rafting by JCPS students are:

1. To give a person self confidence through involvement in adventurous and demanding activities.
2. To increase a person's ability to work with others through involvement in stressful activities in small groups and in leadership roles.
3. To strengthen a person's values through discussion, introspection and periods of solitude in the wilderness.
4. To provide an opportunity for students and faculty to learn an appreciation of nature and to develop an environmental awareness through experiencing a new environment.
5. To aid students and faculty in improving communication.
6. To provide an opportunity for utilization of curriculum activities utilizing the river environment.

V. EQUIPMENT

A. Rafts:

It is important to use the correct type of equipment while on the river. Rafts that are too small or poorly constructed may put a trip in jeopardy. Rafts must be in usable condition and loaded no heavier than the following maximum loads (from Dinosaur regulations):

1.

	Rafts with oars and frames		Rafts without oars and frames (paddled)	
	Number of persons		Number of persons	
	With gear	Without gear	With gear	Without gear
7-man raft	3	4	4	4
*10-man raft	4	6	6	6
Yampa raft	4	6	6	6
* Green River raft	5	7	8	8
12-man raft	4	6	6	6
14-man raft	5	7	8	8
Avon-Redshank	2	4	3	4
Avon-Adventurer	3	5	5	5
Avon-Professional	4	5	6	6
Avon-Spirit	(5)	(7)	(8)	(8) Est.
20 ft. Salmon	8	9		
22 ft. Pontoon	9	10		

* Types of rafts presently owned by Golden High School and Wheat Ridge High School

2. The number of rafts in the party should be adequate to carry the entire party without serious overloading in the event that one of the rafts be completely wrecked or otherwise lost.

B. Life Jackets:

1. Each person must wear a Coast-Guard Approved Type I - vest type kapok-filled life jacket or a Type V - closed cell poly-urathane foam (example: Holcomb Ind. Type V) in good serviceable condition. One extra life jacket must be carried per raft. Life jackets must be worn at all times while on, near, or in the water.

C. Miscellaneous Equipment: (* indicate items required by managing agencies of major rivers.)

1. * Each raft with a floor must carry a bailing bucket.

2. * Each trip should carry an air pump in the sweep boat.

3. * Each trip should carry a repair kit for patching and spare parts for frames - in the sweep boat.

4. * Each trip should carry a complete First-Aid Kit.

A. SUGGESTED FIRST-AID ITEMS FOR RIVER PARTIES ON JCPS TRIPS:

Items should be neatly stored in an easily identifiable and locatable waterproof container.

Highly recommended:

First-aid kit inventory list taped to inside lid of container.
Red Cross First-Aid Manual or equivalent.

Instruments:

Item	Amount/Size	Dose/Purpose
Airway-breathing tube	Adult size	
Scissors	1 medium size	Cutting tape
Razor blade, single edge	2	For removing hair before taping
Tweezers	1	To remove splinters, etc.
Safety pins	10 various sizes	Mending and triangular bandage
Q-Tips (cotton swabs)	1 package	Cleaning lacerations, eyes
Pencil/note pad	1 each	Recording injuries and items used.
Eyedropper		

Relief of Discomfort:

Pain reliever /aspirin, etc	36 tablets, 5 grain	1-2 every 4 hours
Antacid	18 tablets	For indigestion or heartburn
Antihistamine /tetracycline	18 tablets	1 every 4 hours for insect bites, colds, or hives
Salt tablets or table salt and water	1 box or 48 tablets	To prevent exhaustion and cramps due to heavy perspiring
Oil of clove /amphetamine	1 small bottle	Relief of toothache
Calamine lotion /Empirin	1 bottle	Relief of itching from poison ivy or preserver rash
Solarcaine	1 bottle	Relief of sunburn pain
Zinc oxide or other sun block	1 bottle	Prevent sunburn
Wyth anti-venom	1	Venous hemotoxins

Other:

Antibacterial soap (Phisoderm, tincture of zephesis)	8 - 12 oz. bottle	Antiseptic for wounds
Mole skin	1 package	For blisters
Band-aids	36 one-inch	For lacerations

SUGGESTED FIRST-AID ITEMS FOR RIVER PARTIES (Continued)

Item	Amount/Size	Dose/Purpose
Butterfly Band-aids (or know how to make them)	18 various sizes	For closing lacerations
Carlisle (battle dressing) or substitute (Kotex)	3 four-inch	For large bleeding wounds
Elastic bandage	2 three-inch	For sprains, (training if its use is required)
Steri-pad gauze flats	18 - 4" x 4"	For large wounds
Steri-pad gauze flats	18 - 2" x 2"	For small wounds
Tape, adhesive	2 - 2" rolls	For sprains, securing dressing, etc.
Triangular bandage	4 - 40-inch	For supporting arm, legs together, protecting dressing from contamination
Roller gauze	5 rolls 2" x 5 yards	For holding gauze flats in place
Bactine Spray	1 bottle	
Splint, arm Pneumatic	1	For in-line fracture pressure bandage
Splint, leg Pneumatic	1	For in-line fracture pressure bandage
Snake bite kit	1	Constriction band and cold water most effective
Thermometer (shock-proof case)	1	Diagnosing fever
Signal mirror	1	Signalling aircraft in case of emergency
Several dimes		Making phone calls in case of emergency
Space blanket	1	Heat retention

* * * * * * * * * * * * * * *

Optional:

Milk of Magnesia	small bottle	constipation
Syrup of Ipecac	small bottle	Induce vomiting
Eye drops (Visine)	small bottle	Eye wash
Ear drops	small bottle	Clogged ears
Water purification tablets	small bottle	Purify water on side canyon hikes (use bleach for river water)
Eye pad	2	Injured eye
Tincture of Benzoin	2 small bottles	To hold tape in place and protect skin
Insect repellent	large plastic bottle	Flies, ants, mosquitoes
Lomotil	100 tablets	Treatment of Diarrhea (This is a prescription drug but should be carried on long trips)
Neosporin Kaopectate Boric Acid Halazone Calidryl		Should be carefully marked with accurate instructions for use.

5. Each trip should carry canteens, food for emergency use, extra tie-down ropes and at least one 7/16 150' safety rope.

6. Emergency signalling materials

   a. * Each trip should carry a set of emergency signal panals - U.S. Air Force type - 3' x 10', one international orange and one white.

   b. * An emergency signal mirror of the U.S.A.F. type.

   c. Additional recommended equipment is a ground-to-air radio transceiver on frequency 122.9 and a personnel distress flare kit. (This is recommended especially on remote canyons such as Desolation, Gray, Cataract and the Grand Canyon.)

7. * Each raft must carry at least one extra set of oars or two extra paddles on 2 day trips. Longer trips should carry additional spare paddles.

8. * Each trip should have a map of the portion of the river they are floating. The following are suggested and those marked with (*) should be the required minimum.

TRIP	MAP NEEDED
a. Dinosaur	*Topographic Quadrangles, (6 on the Green and 4 on the Yampa) *Dinosaur River Guide, Laura Evans & Buzz Belknap, Westwater Books River Runner's Guide to the Canyons of the Green and Colorado Rivers from Flaming Gorge Dam through Dinosaur and Yampa, Supplement Powell Society, Ltd.
b. Westwater	*Canyonlands River Guide Bill & Buzz Belknap, Westwater Books
c. Cataract Canyon	*Canyonlands River Guide Bill & Buzz Belknap, Westwater Books *Topographic Quadrangles *Guidebook to the Colorado River, Part 3, (Moab to Hite) Geology Dept. B.Y.U. *River Runners' Guide to the Canyons of the Green and Colorado Rivers Labyrinth, Stillwater and Cataract Canyons Powell Society, Ltd.

TRIP	MAP NEEDED
d. Desolation & Gray Canyons	*Desolation River Guide Laura Evans and Buzz Belknap Westwater Books
	*Topographic Quadrangles
	*River Runners' Guide to the Canyons Desolation & Gray Canyons Powell Society, Ltd.
e. Grand Canyon	*Grand Canyon River Guide Buzz Belknap - Westwater Books
	Guidebook to the Colorado River, Parts 1 and 2 - Lee's Ferry to Lake Mead Geology Department, B.Y.U.
	River Runners' Guide..Marble Gorge and Grand Canyon Powell Society, Ltd.
f. Snake River	*Snake River Guide Verne Huse and Buzz Belknap, Westwater Books
g. Colorado River from Radium to Dotsero	*U.S.F.S. White River National Forest Map (1973 Edition)

Publisher Address:

Westwater Books P.O. Box 365 Boulder City, Nevada 89005	Powell Society 750 Vine St. Denver, CO 80206	B.Y.U. Dept. of Geology Provo, Utah 84601

B. CAMPING AND BOATING EQUIPMENT

1. *A portable toilet must be carried and used on rivers where sanitary facilities are not provided.

2. *A metal fire pan should be carried on all trips. Some areas may require use of gas stoves during high fire risk periods. Must be checked out prior to trip departure.

3. Some type of rainshelter should be carried especially on spring and fall trips.

4. Cooking gear

   a. Dutch oven (S) - may not be carried on all trips

   b. Griddle (S)

   c. Cooking utensils

      1) Can opener
      2) Spoons
      3) Spatulas
      4) Meat forks
      5) Tongs
      6) 10 quart bucket (2)
      7) Bowls
      8) Scrubber or brush
      9) Pots

5. Camping gear

   a. Rain flys

   b. Flashlights

   c. Water jugs (2 per boat at least)
      5 or 6 gallon plastic containers are recommended

   d. Parachute cord

   e. Coolers

6. Sanitation gear

   a. Buckets (4 minimum) for washing dishes

   b. Soap

   c. Scrub brushes

   d. Chlorox

   e. Dish towels or paper towels

   f. Shovel - folding G.I. type

7. Boating equipment:

a. Rafts

b. Life jackets - 1 per person (10% extra or one spare per boat)

c. Paddles - 1 per person + 2 or more spare per boat

d. Tie in ropes - 4 per boat or more as needed

e. Camera boxes - 2 per boat

f. Pumps - 2 per trip

g. Bail buckets - 2 per boat

h. First-Aid box - 2 per trip

i. Patch Kit - 2 per trip to include:

Glue	Pliers
Solvent	Screwdriver
Patch material	Scissors
Wire brush	Knife
Nylon thread	Needles (upholstry type)

j. Sweep box - 1 per trip to include:

Black bag	First-Aid box
Pump	Patch kit
150' of 7/16" rope	

k. Parachute cord - one roll available

l. Resource box - 1 per raft, or one large one per trip. Should include the following:

Use appropriate education material depending on the area, for Dinosaur National Monument use:

1) River Runners' Guide to the Green and Colorado Rivers (from Flaming Gorge Dam) Philip Hays & Elmer Santos.

2) A Popular Guide to the Geology of Dinosaur National Monument, Unterman.

3) The Dinosaur Quarry, Good, White and Stucker.

4) The Geologic Story of the Uinta Mountains, Hansen.

5) "John Wesley Powell, Soldier, Explorer, Scientist," (pamphlet).

6) Topographic Map of Dinosaur National Monument.

7) Geologic Map of Dinosaur National Monument.

C. INDIVIDUAL EQUIPMENT FOR RAFTING TRIP

As an aid to deciding what to take: the climate on river trips through Dinosaur National Monument, Gray and Desolation Canyons, or Westwater Canyon is generally warm during the day (hot in mid-summer) with mild evenings (cool in the spring). In the spring and fall, however, there can be occasional cool days and the probability of rain in the canyon is quite good in the spring, but fairly remote during summer and fall. (You can definitely count on getting wet during the day on the raft - at times you will be completely soaked). The raft will almost guarantee remaining upright, but will not commit itself to keeping you on board. A CHANGE OF WARM CLOTHING IS AN ABSOLUTE MUST!!!

Everyone must have, get, or borrow:

Sack lunch for the trip to the canyon

Long pants	2 pair (Yes, girls, you too!)
Warm wool shirt, sweater sweatshirt	(We have experienced snow during the spring)
Lightweight jacket	Preferably water-resistant
Shoes	2 pair (tennis shoes plus one other pair of shoes)
Wool socks	2 or 3 pair
Underwear	2 sets
Swim suit and/or shorts	
Hat	Wide brim or visor, attach a tie-down cord so it won't blow away (protection from sunburn)
Toilet Kit	Toothbrush, toothpaste, soap, etc., towel, sun-tan lotion, chapstick, medicines required by your needs (in waterproof, non-breakable containers).
Silverware	1 setting (unless you eat with your fingers!)
Drinking cup	With handle so string may be attached.

Flashlight	Very handy, especially at night
Pocket knife	Handy, but not necessary for each person
Sun glasses	With retaining strap (also necessary for regular glasses)
Camera and film	We will provide waterproof ammo boxes on river
Small notebook and pencil	
Plastic bags	Waterproof containers for items that must stay dry
Sleeping bag and stuff sack	Waterproof trash-bag to protect them
Ensolite pad	Thin foam pad to provide insulation and minimal padding
Plastic ground sheet	
Rain jacket and pants	
Plate	
Canteen	

As part of the essential river equipment, each group must obtain (usually from the group providing rafts, etc.) for each person the following for use during the river trip:

Waterproof black rubber bag to carry ALL your clothes, sleeping bag, etc. Size: 16" x 20" x 12" deep.

For spring and fall, and occassionally during the summer, you will need plastic or nylon rain tarps, size about 12 ft. x 15 ft. for shelter from the rain. These will provide cover for 3 or 4 people. However, if you have a lightweight and compact (backpacking type) tent, you might want to use it unless you want to become mosquito bait.

YOU MUST RESTRICT ALL YOUR PERSONAL GEAR INCLUDING THAT WHICH WE CHECK OUT TO YOU TO THE AMOUNT THAT WILL FIT INTO THE BLACK WATER-PROOF BAG. ANYTHING ON THE BOAT THAT ISN'T IN THAT BAG GETS WET!!!

VI. MEDICAL INFORMATION AND RELEASE FORM

The purpose of the following form is to minimize the risk of an unexpected drug reaction, recurring illness, etc. from effecting the success of the river trip. Each medical form should be examined for a condition or medicine that could influence a person's behavior and/or reaction time on the river. In the event of some possibly troublesome condition, it might be advisable to contact the student's doctor regarding the student's ability to function on the river. In addition, this form seems to warn parents of risks that may be involved in a river trip experience.

MEDICAL INFORMATION AND RELEASE FORM

STUDENT'S NAME _____ SCHOOL _____

HOME ADDRESS _____
Street City Zip Code

_____ _____
Name of Person to be notified in case of illness or injury Address

_____ _____
Relationship Home phone Business phone

_____ _____
Name of person to be notified if above person cannot be reached Address

_____
Home phone Business phone

Is the student covered by any hospitalization and medical care policy? _____
Yes or No

If yes, give name of insurance company issuing policy _____
and give policy or certificate number: _____

Check if appropriate:

_____ I feel that my present coverage is not adequate and would like information or possible additional coverage for my daughter/son.

When was your most recent physical exam? _____

Were any conditions noted that might cause difficulties on an extended, rigorous trip in a wilderness environment? _____ (Yes or No).

If yes, give details: _____

_____

What medicines are you presently taking on a regular basis? _____

_____
(Be sure to bring enough of each medicine in a waterproof, non-breakable container)

Are you allergic to any medicines? _____ Which ones? _____

_____

Are you allergic to bee stings, insect bites, etc. _____

* *

I give my consent for my son/daughter to participate in the River trip and permission is given for any medical treatment (including evacuation from the river by helicopter) which might be necessary. I fully understand that the Jefferson County Schools do not provide any accident or health insurance coverage for my girl/boy while participating in a river rafting trip. I fully understand that it is my responsibility to provide insurance coverage for my daughter/son. I also agree not to hold Jefferson County Public Schools or any sponsors liable for any illness, misfortune or accident that might occur on the trip.

_____ _____
Date Signature of Parent or Guardian

VII. PRE-TRIP PREPARATIONS

Procedure before leaving logistics base camp to be done by trip coordinator and/or river specialist.

A. Permit:
Be sure you have a permit to run the river if required (including campsite reservations). River permits for JCPS trips are coordinated through the Environmental Education Department.

B. Clothing list:
Should have been given to participants prior to trip.

C. Dunnage bags:
Be sure you have an adequate number plus spare items.

D. Boating equipment:
Be sure all is loaded, inspected - check on master list.

E. Food:
Make sure all is packed for proper number, and each container is marked with its contents.

F. Shuttle drivers:
If needed make arrangements.

G. Rescue facilities and escape routes:
Check to see if staff is briefed on facilities, routes and procedures.

H. Coordinator:
Phone Environmental Education Office to check last minute changes.

I. Transportation:
Coordinator should arrange transportation to and from river.

J. List of participants:
This must be provided to Environmental Education Office for permit and to river specialist prior to the trip.

K. Obtain a medical form and release from each participant. (sample: p 18)

L. Make boat and cook crew assignments.

M. The river specialist should check all life jackets prior to departure. Jackets with hard pockets, major air leaks, defective clips, tears or other defects should not be taken on trip. NOTE: most damage to jackets occurs during water fights, climbing in and out of boats, mud fights and other rough-housing activities. Proper river-running does not destroy life jackets. Do not sit or stand on life jackets.

N. A series of pre-trip orientations for participants is recommended. Possible topics to be included are:

Possible Orientation Meeting Topics:

1. Get names, addresses and phone numbers of all participants.
2. Hand out and discuss equipment list.
3. Hand out medical form and liability release.
4. Summary of trip using film and slides.
5. Raft group assignments.
6. Show samples of equipment and discuss use and care.
7. Plan menu.
8. Arrange transportation.
9. Discussion of the biology of the canyon - use slides.
10. Discussion of the geology of the canyon - use slides.
11. Discussion of the history of the canyon - use slides.
12. River lore, philosophies, "sensitizing", quotations, etc.
13. Discussion of first-aid and evacuation problems.
14. Discussion of Hypothermia - show movie, By Nature's Rules (This should be required especially for spring and fall trips.) By Nature's Rules available from Safeco Insurance Company, 12499 W. Colfax, Lakewood, CO - 232-6622.
15. Discussion of dangerous activities, i.e. no rock climbing, etc.
16. Outline and explain river safety procedures.
17. Discuss rafting techniques.
18. Final equipment check.
19. Food purchasing.
20. A parent orientation meeting is very valuable to explain to concerned parents the dangers and the safety precautions involved in a raft trip. This should be held if at all possible.

VIII. ROLES OF RIVER STAFF

A. River Specialist:
Must be on county-approved list. He is the final authority on the river. His duties are:

1. Safety - On and off the river to include:

   a. Checking safety of gear (life jackets especially)

   b. Safety while running rapids.

   c. Swimming sites.

   d. Safety discussions.

   e. Appoint lead and sweep boat.

   f. Checking contents of first-aid kit prior to trip departure.

2. Expedition planning - with staff:

   a. Campsites.

   b. Rivers.

   c. Negotiations with school authorities.

**3. Approval of staff qualifications - should have selection approval of rafting instructors.

4. Delegation of responsibility to staff.

5. Coordination of logistics.

6. Oversee total trip.

7. Working with own raft as rafting instructor.

8. Procurring a permit to run the river through Environmental Education Office (should be done by trip coordinator at the school taking the trip.)

B. Assistant River Specialist or most experienced boatman. Second in command of trip. Duties are the same as those of a rafting instructor, but will take over command if river specialist is incapacitated or absent. Often in sweep boat for safety.

C. Rafting Instructor:
Must be on the county-approved list. A rafting instructor for the Jefferson County Public Schools works under the direct supervision of the river specialist in charge. In broad terms, the major responsibility of the rafting instructor is to insure that each participant in his boat receives a safe, positive, and fulfilling experience on his river trip.

Specific duties of the rafting instructor include:

1. To meet and establish a rapport with his boat group at the embarkation point and see that they are adequately fed and sheltered throughout the trip.

2. To familiarize participants with all equipment and supervise the rigging of the boat.

3. To safeguard all personnel and equipment in his care throughout the trip.

4. To teach river rafting skills to all members of the raft group, encouraging self-sufficiency within the group but personally insuring control of the boat.

5. To teach necessary camping skills and participate with cooking, clean-up, derigging, etc. as needed.

6. To provide other instruction and interaction as directed by the river specialist, i.e., history, geology, biology, environmental education, games, river lore, etc.

IX. ENVIRONMENTAL ACTIVITIES

The canyon environment is a perfect environmental classroom, and these activities will help assure the use of this classroom to its fullest.

Since the logistics and safety components of a river trip are very important and time consuming, it is recommended that the river specialist appoint another adult to be responsible for planning and executing river trip activities. If these activities are to be successful, they will require planning and preparation prior to and during the trip.

List of Activities:

1. Say "Hi" to the river; say "Bye" to the river
2. Get to know your land
3. Hot seat
4. Solo experience
5. Exclusion game

To the River Trip Leader:

These activities have been designed to help you to make your river trip a more meaningful and educational experience for everyone involved. It is critical, however, that the trip leaders be attuned to the over-all moods and attitudes of the group at all times, and having studied and prepared for these activities well ahead of time (several weeks or months before your trip), be able to use the proper activity at the proper time.

Every trip is different, and some activities will be successful one time, and not the next. The leader must be able to "feel" the readiness of the group, and having all the activities in mind, select the one (or ones) which will enhance the meaningfulness of the trip at that particular time. These

activities are written so as to be "structured for non-structure." Their success depends upon the leader's ability to spontaneously introduce them when the "mood" is right, without flipping through this packet saying, "Let's see, kids. Now it's time to do something educational. I'll just read through activity #2 and see what we're supposed to do." Sometimes an activity can be more effectively begun by a student, who in helping to plan the trip, has studied and thought about these activities. Students also are frequently better able to access the attitudes of their fellow "river rats", and can start the group on an activity when they are most likely to benefit from it.

Included in this packet is a suggested time-table of activities for a five day trip. It is subject, however, to the types of students on your trip, as well as to many outside factors, such as the weather, and the amount of free time. Each activity is written with a goal in mind and a mood to look for, which will help to indicate a good time to introduce it.

Suggested Schedule of Activities

Day 1	Day 2	Day 3	Day 4	Day 5
Say "HI" to the River and Hot Seat	Hot Seat and/or Get to Know Your Land	Hot Seat and/or Get to Know Your Land	Hot Seat	Solo Hot Seat Say "BYE" to the River

Activity: Say "Hi" to the river; say "Bye" to the river

Part I

Time: First day, after the boats are inflated and loaded, and everyone is seated and ready to go; but BEFORE the river specialist gives paddling instructions, safety rules, signals, etc.

Mood: Anxious to go, excited, but attentive to instructions

Goal: To introduce selves to the river (and each other), and to establish a first "contact" with the river. The leader should expect some flippancy in the students' introductions; they will probably think this activity "corny". This is O.K. at this time; look for attitude changes at the end of the trip, when the responces to Part I of activity will be compared to the responces to Part II.

Activity: Say "Hi" to the river; say "Bye" to the river (continued)

Instructions:

1. Leader #1 stands on the shore, facing loaded boats and says "Time for everyone to get to know the river a little bit before we shove off." Then leader #1 turns to Leader #2, or to a student, and says, "Joe, you start. Introduce yourself to the river, while the rest of us listen."

2. Leader #2 (or student) says to the river, "Hi, river, my name is Joe."

3. Leader #2 then turns to the person next to him and says "Your turn. Say 'Hi' to the river."

4. Continue introductions in this manner around the people in boat 1, then boat 2, etc.

5. After all introductions, one of the leaders tells students that they will be saying good-bye to the river in much the same way in two (or three or four) days, and to occassionally in the next few days, examine their feelings towards the river.

6. River specialist explains safety, etc., and reads a poem or exerpt from a "mood" book (Wind in the Willows, Powell's Diary, or other.)

Part II Activity: Say "Hi" to the river; say "Bye" to the river

Time: Last day on the river, after the boats are unloaded and the gear packed up. (Leader must be alert and sensitive to the proper moment, perhaps after group pictures have been taken.)

Mood: Somber, reflective, sorry to see it be over

Goal: To contrast the sentiments expressed (as well as those which were privately felt, but not expressed) on the first day on the river with those of the last day. Discussion and reminiscing should be avoided until after everyone has said good-bye to the river in his or her own way (not necessarily out loud).

Instructions:

Each person is given the opportunity to say good-by to the river. At this time, all other activity ceases, and the whole group (crew included) gathers on the beach and faces the river. One by one, bid farewell to the river. If the trip has been good (and what trip hasn't?), this may be emotional and sad; allow these sentiments to be expressed.

Activity: Get To Know Your Land

Time: As early as possible in the trip, since part of its goal is to sensitize the student to aspects of his environment which are normally screened from his consciousness.

Mood: The main goal of this exercise is affective and mood-producing almost to the point of being "corny". Musical instruments and mood readings should be encouraged. The majority of the structuring should be done before this experience with as little structure as possible injected during the activity. Rely on the wilderness to elicit the desired responses.

Goals:

1. To sensitize the student to a more varied and heightened awareness of wilderness. Touch, hearing, smell and taste will be re-evaluated as opposed to the dominant sense of sight.

2. The student will experience a greater empathy for wilderness.

3. The student will discover the microtomes of the area experienced and the realization that these microtomes are where "ecology" begins.

Instructions:

1. Pick a place for this activity somewhat away from the river for two reasons.
   A) The students will be listening, and a river masks many small sounds.
   B) Vegetation likely to produce pollen and spores which irritate sinuses and allergies are more prevalent near water.
   The space selected need only be large enough to accomodate the people involved at distances of about ten feet apart. Flat, rocky pine forest areas are excellent, but the possibilities are infinite.

2. Leaders and students sit quietly and comfortably with eyes closed, concentrating on all senses other than sight. This activity should be introduced and subtly lead by a facilitator, as the students most likely will be self-conscious at first. Be patient in waiting for the students to begin concentrating, as it takes time for them to quiet down and curb their energies. Sit silently, listening, smelling, feeling, for five or ten minutes, or until the leader notices a restlessness withing the group.

3. At this time the students may want to express and share their new awareness. The leader should be sensitive to the moods and attitudes expressed, and when the wilderness-type discussion begins to degenerate, lead the group on to the next phase of this activity.

4. Instruct the group to stand up, stretch (if they haven't already) and then to lie down flat on their stomachs, several arms lengths apart, or wherever there is room to lie comfortably. (Leaders participate also) Watch out for thorns and cactus.

5. With arms outstretched, palms down, and cheeks on the ground, concentrate on all senses while exploring the small area occupied by the body. The leader can begin activity by discovering something he or she has never before experienced, and share it with the group.

Instructions: Get to Know Your Land (continued)

6. After a proper amount of time as determined by the present mood, the leader asks everyone to reach in front of themselves, as far as they can, and draw a front "boundary line" in the soil. In a similar manner, everyone should mark side boundries and lower boundries with the feet.

7. The leader should stress the concept of personal property and private occupancy (Look closely though. How "private" is it?) and ask everyone to investigate "their" land as completely and minutely as possible using all the senses.

8. Students should be encouraged to find new personal experiences and share them. Students and leaders should also visit each others lands and "tour" them.

9. When the group seems finished with this activity the leader should gather the group together again to sit comfortably in the wilderness and play guitars, flutes, recorders or whatever other instruments the students have (not essential, but nice) and read to each other from books about the wilderness. (See Reference Card for suggested books).

10. The leader can look for attitude changes as a means for evaluating this experience. It has been observed that the students tend to walk (for a while as least) much more carefully, perhaps in single file, watching where they place their feet on the land and will express protective feelings of "ownership" and empathy for "their" plot.

11. HINT: A similar but much more mystical and intense experience is described in Carlos Castanedas' The Teachings of Don Juan: A Yaqui Way of Knowledge, pages 32-38 (hardback edition) or page 18 (softback). The goal of the related experience is very different, but from the facilitator's point of view, the overall experience is similar.

Activity: Hot Seat

Time: This game is best played while floating (and/or paddling) through long stretches of flat water.

Mood: This may be played anytime regardless of the prevailing moods and attitudes, unless perhaps, the students are particularly rowdy.

Goals:

1. Each person will get to know his or her crew members well during the first few days of the trip and will begin to know himself better.

2. A vehicle is created for the discussion of wilderness-sensitivity topics (i.e. the responsibility of each individual to the river and to the rest of his environment.)

Instructions: Hot Seat

One person at a time is sitting on the "Hot Seat". This means that he must truthfully answer any question put to him. (His only other option is to state that he'd rather not share this information with the others at this time.)

The person sitting next to him asks him any question (i.e. What was the most embarrassing moment in your life? What do you hope to gain from this trip? What are your long-range goals for yourself? If you had it, how would you spend a million dollars? What is your favorite color and why?)

Each crew member in a clockwise or counter-clockwise manner then asks that same person a question. The person previously on the "hot seat" then asks the person sitting next to him a question and the questioning again proceeds around the circle until everyone has been on the "hot seat" at least once.

The leader can skillfully begin guiding the direction of the questioning towards environmental issues at any point during the game.

Activity: A Solo Experience

Time: As late into the trip as possible, but before the last leg of the trip (i.e. the morning of the last day right before leaving the last campsight after loading up the boats.)

Mood: Looking forward to the last day, anxious to make it a good day, yet reflective and sad because it is the last day.

Goal: To reinforce reflective thought in the wilderness and to force individuals to be alone with only natural distractions; to let the mind breathe and roam free.. Some students if not encouraged might never leave the "protection" of a group, and must be prodded a bit with a "structured" time set aside for such meditation.

Length of solo: This is up to the discretion of the trip leaders as it is dependent upon the weather, the mood which has been developing on the trip, the amount of trip time available, insects, etc. Thirty minutes should be the absolute minimum time allotted.

Inspirations:

If the trip leaders feel that the reflective mood must be "created" prior to the solo, the following inspirations are suggested:

1. Readings from Siddartha, particularly the dialogue with the ferryman near the end of the book.
2. "The River", a poem from Mason Williams Reading Matter.
3. Readings from On the Loose, by Terry and Renny Russell.
4. Readings from In Wildness is the Preservation of the World, quotes from Thoreau.

Inspirations: A Solo Experience (continued)

5. Readings from Leaves of Grass, by Walt Whitman.

6. Readings from Sand County Almanac, by Aldo Leopold.

7. Readings from Pilgrim at Tinker Creek, by Annie Dillard.

or:

8. Give each member a small, smooth river stone to take with them on their solo and suggest that they think about it and how it came to be.

9. Ask the students to think about the last time tney were alone with themselves for any length of time - away from the noise of people and the city.

Instructions:

1. Set the mood (only if necessary) using any of the devices previously mentioned.

2. Gather the group together and say something to the effect of: "Let's all take our journals and go off by ourselves for about (one hour) and reflect upon how we've all grown because of this experience, our trip, and how many of our attitudes have changed towards ourselves, each other, and the wilderness."

   A. The leader should emphasize "by yourself", and encourage a respect for everyone's need to sometimes be alone.

   B. The leader should not be upset if some students begin to wander back before the allotted time is up. Tell them that they haven't "failed" in their reflective abilities, and that there are certain times when a person feels reflective and certain times when he doesn't.

X. CHECK-IN AND EQUIPMENT ISSUE

Procedure at put-in point of trip.

A. Boat and Cook Crews
   Divide group into boat crews and meet with rafting instructor

B. Equipment issue
   Rafting instructor will explain the use and care of all equipment to his/her crew.

C. Cups
   Cups should be kept with the participant during the day.

D. Clothing check
   Rafting instructor should insure that all participants have adequate clothing to meet expected weather conditions.

E. Dunnage bags
   Rafting instructor shall explain the use and care of dunnage bags and proper sealing for water tightness.

F. Shelter
   The rafting instructor shall explain or demonstrate how to rig a rain shelter.

G. Introduction of staff
   At some point before retiring for the night an introduction of the river staff should be made.

H. Participants' expectations
   At some point during the first evening a discussion of the participants' expectations should take place. If time is limited, do this on second day.

I. Explain the need of speed in getting off in the morning.

J. Explain latrine procedure to group
   1. Use outhouses when available
   2. Use Porta-Pottie when no outhouses are near.

XI. CAMP CRAFT

A. Cooking

Each rafting instructor should cover the following with his cook crew:

1. Use and care of gas stoves.

2. Explain food organization in food bags.

3. Explain the use of utensil box.

4. Explain the menus for that meal - get from river specialist.

5. Explain the importance of drinking plenty of liquids.

6. Explain the importance of using drinking water vs. river water for various tasks.
   a) Cooks and food handlers should wash hands in soapy water before beginning to prepare meals.

7. Use a fire pit if available or fire pan.

8. Insure that all food and utensils are put away at night.

9. Fires
   a) Gas stoves and sufficient fuel should be carried due to diminishing driftwood supply along many of the rivers used on JCPS trips.

   b) If open fires are to be built only charcoal briquets or driftwood may be used. Gathering wood from trees, dead or alive, is prohibited. Fires must be contained in metal fire pan to prevent spread of ash and charcoal over beaches. Fires should be allowed to burn out as much as possible and remaining ashes deposited in the main current of the river. Such deposits must be cleaned of all non-burnable materials. It is recommended that fire pans be elevated to avoid scorching sand and to prevent severe burn injuries.

   c) The kindling of open fires using gathered wood, charcoal, or similar fuels is prohibited when away from beaches. Gas stoves are required for overnight trips away from the river unless wood fires are permitted by the managing agency of the river. The use of gas stoves may be required by some areas during periods of high fire risk. Check with managing agency prior to departure.

XII. SANITATION AND CLEAN-UP

A. Explain the need and use of boiled river water for wash and chlorox rinse buckets.

B. The cook crew shall be responsible for cleaning and storing eating and cooking utensils (personal utensils excluded).

1. Use a hot wash and rinse
2. Let dry
3. Pack in utensil box

C. Explain the care of cast iron dutch ovens and griddles.

1. Do not use detergents for clean-up
2. Do not let item get too hot
3. Do not let item rust

D. Explain how cups can spread disease.

E. Explain that the outhouses or Porta-Potties shall be used.

F. Explain that all trash shall be taken with the party.

G. Refuse

Some beaches used to look like garbage dumps at the end of the season. The following requirements were developed to eliminate this problem.

1. Cans, rubbish and other refuse MAY NOT BE DISCARDED IN THE WATER OR ALONG THE SHORE OF THE RIVER. This shall also apply to any side canyon, trail, escape route, or any other portion of a canyon.

2. All burnable material must be completely burned or carried out.

3. All cans, bottles and other noncombustibles shall be carried out.

4. Liquid and wet garbage attract red ants, flies and animals which dig up the refuse, as well as resulting in smelly beaches. Liquid garbage such as coffee, soup, or dish water should be drained into the river (NOT on shore); wet garbage such as egg shells, left over solid food, bones, grapefruit peels, melon rinds, etc should be carried out.

5. Grease should be burned or carried out.

6. The trip leader should make sure that participants are aware of proper disposal of pop-tops and cigarette butts.

H. Soap and sanitation:
No soap, shampoo, etc will be used in tributary streams for any reason, including washing utensils or bathing. Soap, shampoo or similar items may be used in the Colorado, Green or Yampa Rivers provided they are biodegradable.

I. SANITATION GUIDELINES

A. Section 1

Communicable Disease: Causes, Transmission and Control

Diseases are often classed by the part of the human or animal body that is generally involved. Therefore, we have such terms as upper respiratory diseases for those that affect primarily the nose, sinuses, throat and bronchial tubes and gastro-intestinal illnesses for those that affect primarily the stomach and intestines. The latter are often referred to as the G.I.'s. The organisms that is bacteria and viruses, of greatest concern on a river trip are the following: Shigella, Salmonella, Clostridium perfringens, streptococcus, staphylococcus and bacillus cereus. All of these produce illness by infection, except staphylococcus which produces a powerful toxin, or poison. Most of these organisms cause gastro-intestinal illness characterized by nausea, vomiting, cramps, diarrhea and fever.

The gastro-intestinal illnesses are the ones that are of primary public health importance in developing sanitary food, water and sewage disposal systems and procedures. The organisms that cause these illnesses are normally taken in by mouth and pass out through the lower intestinal tract. Frequently they are contaminants in food and water that are improperly handled or treated. They can also be spread by direct contact from person to person. This direct contact method of transmission is referred to as fecal-hand-mouth i.e., bacteria or viruses from the intestinal tract contaminate the hands and are then carried into the mouth and swallowed. Once in the intestinal tract they may produce sufficient numbers to cause illness.

The usual source of gastro-intestinal organisms is the human intestinal tract. Staphylococcal bacteria, however, are normally found in the nose or in boils and infected skin lesions. Under suitable circumstances, they produce

a powerful toxin that causes severe gastro-intestinal illness. Once this toxin is formed it will not be destroyed by heat. Staphylococcal bacteria usually find their way into foods on the hands of a food handler who has boils or wound infections or has had his fingers in his nose.

In addition to the human sources, which may be passengers or crewmen, certain meat and poultry products may be contaminated with diseased organisms at the slaughterhouse or butcher shop. Such products need only to be left unrefrigerated for growth of the bacteria to take place. If these foods are inadequately cooked the bacteria survive. Lack of refrigeration results in tremendous growth of the organisms. Disease organisms in meat and poultry products also will result in the contamination of knives and grinders, food preparation surfaces, and the hands of the food handler during preparation and handling. This, in turn, leads to contamination of other foods.

The contamination of food alone does not necessarily mean that it will produce illness. The "contaminating dose" of an organism may be too small to produce illness. Each type of organism has a characteristic "infective dose" which varies from one type of organism to the next. Some diseases require relatively few organisms in the infective dose. Others may require an infective dose of several million organisms. There is also the situation where the organisms must first produce a toxin.

Following contamination of a food, it is usually necessary for reproduction of the bacteria to take place before an infective dose is developed. In order for a contaminating organism to grow or reproduce enough to develop an infective dose or a large amount of toxin, three factors are required: time, temperature and nutrient source.

Under ideal conditions a single bacterium may reproduce itself in 10-30 minutes. At this rate one organism will produce many millions in a 12 hour period. Since a typical infective dose for one person numbers from a few

hundred thousand to several millions, it usually takes no more than 3-4 hours to produce enough bacterial growth to cause illness in a large number of people. This is especially true when the initial contamination involves a large number of organisms.

Temperature plays an important role in the preservation, growth and destruction of bacteria and viruses. Cold and freezing rarely kills them, but does prevent or inhibit growth. In fact freezing at very cold temperatures is a good means of keeping bacteria and viruses alive for long periods. On the other hand, temperatures above 167^{o} will readily kill bacteria and viruses alike and is important in their elimination from foods. Most of the disease organisms which are of concern will grow well between 77^{o} F. and 114^{o} F. with rapid growth occurring at 98^{o} F., the temperature of the human body.

Like all living things, bacteria and viruses require nutrients in order to survive and reproduce. Foods that offer excellent sources of the required proteins, carbohydrates, sugars, fats, etc., are: meat and meat products, poultry and poultry products, stews, gravies, salads made from ham and chicken, stuffings, slaws made with mayonnaise, cream and milk, custards, eggs and many others. In addition to the nutrients themselves, moisture is needed. Dried foods do not support the growth of disease organisms. It is also of interest to note that high concentrations of some nutrients will actually retard growth. A highly salted food especially when dried, is a good example; and jellies and candies are preserved for considerable periods of time because of their high sugar content.

If foods are contaminated with disease organisms at the time of purchase, and this is not uncommon with certain foods, it is important to prevent contamination of other foods during meal preparations. It is also important to cook the food sufficiently to kill the organisms present and not to recontaminate it after cooking. Once prepared for serving, hot foods should be kept hot and cold foods should be kept cold. This will prevent bacterial growth.

In order to prevent contamination of food during its preparation along the river, personal and environmental cleanliness are vitally important. No one with the symptoms of a communicable disease, especially diarrhea, should be allowed to prepare food for others. Neither should anyone with infected wounds or boils be permitted to handle food. As disease causing organisms often get into food on the hands of a person preparing food, scrupulous personal cleanliness is important. Washing the hands with soap and water is essential after going to the toilet, handling raw meat and poultry, putting fingers in the nose or handling objects that may be contaminated.

All surfaces with which food comes into contact during preparation, including knives, utensils and tabletops, must be clean and sanitary. Tables and equipment used for preparing raw meats and poultry should not be used for cooked foods until they have been cleaned thoroughly. Food poisoning outbreaks have occurred when cooked turkeys were sliced on the same meat blocks used for cleaning and preparing raw turkeys.

The means by which foods become contaminated with disease organisms and the subsequent processes through which these organisms pass in order to become dangerous to human health dictate the procedures necessary to interrupt the chain of events leading to an outbreak of human illness. Briefly stated these procedures are:

1. After going to the toilet or handling raw meat or poultry, wash hands with soap and water before handling and preparing foods.

2. Cooked or other prepared foods should come in contact only with clean and sanitized surfaces, equipment and utensils. Equipment used for raw foods should be washed and sanitized before using them on cooled foods.

3. Persons with communicable diseases, infected wounds on the hands and arms or boils should not be allowed to prepare food.

4. Stored perishable foods should be kept at temperatures below 45° F.

5. Foods such as meat and poultry products should be cooked at a temperature and for a period of time adequate to destroy all disease organisms.

6. After preparation and prior to serving, keep hot foods hot, and cold foods cold.

7. Leftover perishable food should be discarded or refrigerated immediately in clean and protected containers.

8. Leftover perishable food should be thoroughly reheated before use.

B. Section 2

Guide to Equipment and Facilities

The recommended equipment and facilities are as follows:

Handwashing:

1. A running water supply consisting of a covered water container with a spout at the bottom, or a plastic jug with a hole and cork near or at the bottom. Two of these are required - one by the toilet and one by the food preparation area.

2. A liquid or bar soap approved by the Environmental Education Office - must be biodegradeable.

3. Disposable paper towels. Towels used by more than one person are not acceptable.

4. Waste water container.

5. Chlorine liquid bleach. Other approved sanitizing compounds may be used, but chlorine is recommended.

6. Plastic eye dropper or other suitable measuring device.

Dishwashing:

1. Four (4) metal tubs or buckets large enough to immerse utensils being washed. Galvanized buckets are acceptable.

2. Several dishwashing mops (cotton, nylon net, or other suitable material) with a boilable handle.

Dishwashing: (continued)

3. Soap or detergent.

4. Tongs to retrieve dishes dropped into the hot water tub.

5. Clean, polyethylene or paper bags to store dishes and silver.

6. Disposable paper towels for wiping dishes unless they are air dried. Reusable towels or handi-wipes are not acceptable.

7. One or more large dish-rack suitable for air drying dishes and utensils, unless disposable paper towels are used.

8. Clean storage box or cabinet with cover for storing dishes, trays, silver, and food preparation utensils.

Drinking Water Storage:

1. Large polyethylene or metal water containers with tight fitting lids and spouts - at least two per trip. Cadmium or zinc plated containers are prohibited.

2. Commercial chlorine bleach.

Food Storage: (Non-refrigerated)

1. Plastic wrap, aluminum foil, or polyethylene bags for all unpackaged foods. Zip-lock bags are excellent.

2. Sealable cans, glass containers, plastic or foil pouches for storage of dried foods.

Food Storage: (Refrigerated)

1. A box of adequate size to hold all perishable foods and insulated to keep ice as long as needed. The inside surface must be smooth, non-absorbent and easily cleanable, e.g., molded fiberglass, polyethylene, stainless steel, aluminum, plastic coated wood or formica. It must have either a removable drain plug or a continuous drain setup.

2. An approved dial thermometer (probe type)

3. Ice purchased only from a licensed ice manufacturer or made in commercial ice makers, in sufficient quantity to last as long as perishable foods are to be kept and used. Dry ice is acceptable. It should be placed on top of the food. It will not last as long however.

4. Polyethylene bags in which to package the ice.

5. A rack or grate for bottom of ice chest to keep foods out of ice melt.

Food Service:

1. Cooking utensils should be stainless steel, aluminum or cast iron. Enamelware, graniteware and cadmium plated materials are prohibited.

2. Knives for exclusive use in food preparation. Personal knives should not be used.

3. Oilcloth, vinyl or other suitable covering for food preparation and service tables.

4. Food slicing and chopping board. It should be cleaned, replaced or resanded frequently. Special teflon-like cutting boards are available commercially. Soft absorbent woods such as pine should not be used.

5. Aluminum foil or plastic wrap for wrapping lids, pan covers, and foods.

6. Large serving spoons, forks, ladles and spatulas for serving food.

7. An accurate dial thermometer (probe type) for checking temperatures of hot foods, dishwater, etc.

8. Reusable eating utensils, trays or plates and cups (metal or plastic) or disposable single service eating utensils, plates or trays and cups.

Human Waste Disposal:

1. Portable chemical toilet (preferably the recirculating type).

2. Toilet paper (preferably the disintegrating type).

3. Bowl Brush.

4. Sanitizing chemical for cleaning the toilet bowl - chlorox.

5. Chemical to treat waste in toilet as recommended by the manufacturer of the toilet - a non-zinc containing chemical.

6. Shovel for digging disposal pit.

7. A sturdy holding tank if sewage is taken out of the canyon.

8. A fresh battery to operate recirculating type toilet.

9. A separate box or heavy bag in which to store toilet on boat.

C. Section 3

Guide to Sanitary Procedures

No matter how good the equipment and facilities are, the final responsibility for the prevention of diseases transmitted through faulty food handling techniques and procedures rests with the rafting instructors. The following procedures, if followed, will virtually eliminate the threat of diseases spread through food and water.

Refrigeration:

1. Surround foods in the cold box with bagged ice.
2. Drain ice melt from cold box frequently.
3. Check cold box temperatures each time it is opened. Temperature should be 45° F. or less in the warmest part (immediately under the lid).
4. Do not open cold box any more than necessary.
5. Refrigerate leftovers promptly.
6. When ice has melted use perishable foods within 6 hours.

Handwashing:

1. At a convenient height, set up a sanitized running water supply with soap and paper towels near the toilet and the food preparation areas. Use two teaspoonfuls of liquid chlorine bleach per gallon of water for sanitizing.
2. Wash hands after using the toilet, after handling raw meat or poultry and before preparing food for consumption.
3. Instruct passengers on hand washing after using toilet and before assisting in the preparation and serving of foods.
4. Maintain adequate hand washing supplies.

Food Handling:

1. Protect unpackaged foods from contamination by storing in plastic wrap, plastic bags, foil or lidded cans or jars. Protect dry foods from moisture until used.
2. Thaw frozen foods in the cold box or cook frozen. Do not allow to thaw at "room" temperature.

Food Handling: (Continued)

3. Disposable plastic gloves are recommended for all food handlers.

4. Have available an adequate number of serving spoons, forks, ladles, etc., so people will not use their own in the serving dishes.

5. Keep the cutting board clean. Scrub with hot soapy water and rinse after each use. Cooked foods can be contaminated by a dirty cutting board.

6. Keep all food utensils and tools clean. Store them in plastic bags when not in use.

7. Never use personal knives for food preparation or serving.

8. Use of oilcloth, vinyl or other suitable cover on all food preparation and serving tables.

9. Keep food preparation and serving table top clean. Wipe off all spills promptly.

10. Keep all food containers covered when not cooking or serving. Covers can be made easily with aluminum foil if there are no lids.

11. Check temperature of foods during cooking by using a probe thermmometer in the center of the pot. The following minimum temperatures should be maintained during cooking.

Pork - 150^{o}	When properly cooked the meat will be white with no pink coloring.
Beef - 160^{o}	Should not be served rare.
Poultry - 160^{o}	Poultry should be cooked until the meat is tender and easily pierced with a fork.
Stews and Meat Pies - 165^{o}	
Reheated meats or gravy dishes - 165^{o}	Wrapping in foil will prevent excessive drying

12. Tie back long hair when working in food area.

13. Wear shirts while working in food area.

14. Never store chemicals, disinfectants, etc., in same compartment with food.

Dishwashing:

1. Heat three large tubs or buckets full of water for dishwashing before preparing meals. Have a fourth bucket of cold water. Put approved detergent in the first bucket with cold water for washing.

Dishwashing: (Continued)

2. Put approved detergent in first hot water bucket for washing, clear water in the second for rinsing, and clear water in the third for final rinse and sanitizing.

3. Reheat the wash and rinse water after the meal is prepared. The The sanitizing rinse, i.e., the third bucket, may be reheated or sanitized with chlorine (2 teaspoonsful of chlorine bleach per gallon of water). Double the chlorine dose if water is cloudy or turbid.

4. Scrape plates or trays and dispose of garbage in accordance with solid waste instructions. Beach sand can be used to scour dishes.

5. Wash plates and utensils with a dishmop in the first tub to remove grease and food particles. Water temperature should be 120°-140° F.

6. Dip rinse in second tub. Water temperature should be 120°-140° F.

7. Immerse plates and utensils in the third tub for required time: 60 seconds for a chlorine rinse in lukewarm water; 30 seconds for rinse in hot water of 180° F. or more. Heat sanitizing is quicker, but water temperature must not fall below 180° F. Double the contact time if towels are to be used for drying.

8. Rack plates and utensils for air drying or wipe dry with clean paper toweling.

9. Place dry plates or trays and silverware in plastic bags and store in clean, dry location.

10. Wash and sanitize all food preparation and serving utensils and equipment in the same manner.

11. Reheat rinse water if temperature drops below 180° F.

Drinking water: Preparation and Storage

1. Refill drinking water containers only from the center of the main channel or river, NEVER from tributaries or near shore where the water is apt to be contaminated. This applies only to known streams where water is drinkable or in emergencies.

2. Add prescribed amount of chlorinating agent (eight full drops per gallon of water or sixteen drops if water is cloudy or turbid. (Approximately 1 cap full per 5-6 gallon container if using chlorox)

3. Mix thoroughly and let stand 30 minutes before using for drinking or mixing beverages. Filling containers and chlorinating 30 minutes before landing will save inconvenience and insure a safe water supply. Proper standing time will also dissipate any objectionable chlorine taste.

Drinking water (Continued)

4. Keep lid on drinking water containers except when filling, chlorinating or mixing drinks.

5. Plan ahead so you don't run out on a hot day. Keep one full container in reserve.

6. Whenever possible carry enough pure water from public water supplies for the entire trip.

Solid Waste Disposal:

1. Burn all burnables in cooking fire.

2. Biodegradable garbage may be disposed of in the river.

3. Pack out all other garbage, cans and trash in empty food packs or other special garbage bags or containers. If food packs are used, line them with polyethylene bags.

Human Waste Disposal:

1. Set up portable toilets, where possible; at least six feet above the high water mark, 300 feet from normally used camping area and 50 feet from the river bank.

2. Add approved chemical as recommended.

3. Set up paper bags for paper waste.

4. Instruct passengers to use the toilet - not the ground.

5. When dismantling, dig a hole in the sand at least 18 inches wide and two feet deep, at least 300 feet from the camping area.

6. Burn paper toilet waste and bag in the hole.

7. Drain toilet contents into the hole or empty contents into holding tank for removal from river at end of trip. Flush and rinse the toilet with several buckets of water.

8. Wash and sanitize bowl and seat with approved agent and rinse.

9. Store toilet in separate box or heavy bag.

10. Wash hands thoroughly.

XIII. RAFT INFLATION AND PREPARATION

The following should be done by the rafting instructor:

A. Check with river specialist for any new details on the equipment.

B. Unloading: vehicles should be unloaded by the participants.

C. Inflation: demonstrate how to inflate boat and check presure.

D. Accessories: have participants get the proper number of paddles, life jackets, resource boxes, camera boxes, repair boxes, first-aid boxes, bailing buckets, pumps, tie in ropes, water jugs, food bags and dunnage bags.

E. Launch boat: show how to carry boat - do not drag.

F. Load boat: show how to

1. Tie in dunnage bags to be secure in event of a tip-over.
2. Tie in food bags.
3. Keep ropes short to ammo boxes.
4. Secure bow line - bow-knot on bow (a knot like used to tie shoelaces)
5. Have no loose lines on board.
6. Keep bow light but not empty.
7. Leave leg room.
8. Sit on tube.
9. Tie in spare paddles and life jackets.

G. Use of equipment: demonstrate or explain use of all equipment.

H. Care of equipment: demonstrate or explain care of all equipment. Especially how to keep wear through chafing or rubbing to a minimum

I. Life jackets: stress care of life jackets

1. Do not sit on life jackets.
2. Spare carried on top of duffle.
3. Squeeze bag to check for leaks; on type V jackets check straps, clips, and fabric for tears, damage or missing parts.

XIV. INSTRUCTIONAL SEQUENCE

A. Instruction given by river specialist prior to embarking on river.

1. Dress: explain the following:

   a. Wool is warm even when wet

   b. Wind proofing is necessary

   c. Sun protection to include sun glasses, hat and zinc oxide

   d. Stress the dangers from exposure to wind, water and sun

2. Crew responsibilities: explain the following:

   a. Rafting instructor - ultimate commander

   b. Captain - shouts commands

   c. Signalman - gives paddle signals

   d. Bowman - last one in, first one out, bow rope stower

3. Basic commands: commands given by captain. Stress that they should be standard.

   Left, Right, Forward, Back paddle, Hold, Rest

4. Signals: explain usage:

   a. Man overboard - one paddle in air

   b. Stop (lead boat) - one paddle swirled in air and pointed horizontally with blade toward desired bank.

   c. Emergency stop (any other boat) - all paddles briefly in air accompanied with shouts.

   d. Danger ahead - two paddles crossed and then pointed in the direction to go to avoid danger.

   e. Wildlife ahead - be quiet...two paddles crossed but held handles up (just upside down of danger signal).

5. Basic strokes: explain the following:

   a. Forward stroke

   b. Backward stroke

   c. Procedure for left turn

Basic strokes (continued)

d. Procedure for right turn

e. Draw stroke

f. Feathering the paddle

g. Hold

h. Rest

B. Instructional sequence: Given by rafting instructor while on river

1. Commands and turns - practice turns and paddling

2. Anticipating boats momentum in turn - pick out a reference point on bank

3. Captains: rotate captains in flat water so everyone has turn

4. Ferry position: explain how to get 45^{o} to current

5. Float in life jacket: have crew float in life jacket, two at a time, Note swimming ability and composure.

   Have students discover:

   a. Coldness and power of river

   b. Difficulty of getting back in raft

   c. This procedure may be eliminated due to water or air temperature or other conditions at the direction of the river specialist.

C. Instruction by river specialist at first minor rapid

1. Eddies and eddie fences

2. Tongue

3. Holes

4. Sleepers

5. Angle of entry

6. Position or attitude

7. Review and theory

8. Questions answered

D. Instruction at major rapids by rafting instructors: Have students work as group to:

1. Identify the obstacles and potential current problems
2. Consider the ideas of each crew member
3. Make a plan and alternate plan
4. Decide how to initiate alternate plan if necessary
5. Pick out markers on shore to help identify position in rapids
6. Check with river specialist if the run is out of the ordinary or dangerous
7. Designate captain, bowman and signal man

XV. DAILY CARE OF BOAT

Duty of rafting instructor each evening:

A. Unload boat

B. Turn boat on side and wash out all sand and trash

C. Check for holes or leaks in floor and tubes

D. Turn raft over and carry above high water mark

E. Tie the boat to rock or tree so it won't blow away

F. Bunch all life jackets and place on top of or near to the boat - secure, especially from blowing away

G. Put all raft gear neatly near boat tied to prevent blowing if necessary

XVI. ENDING THE TRIP

Procedure under direction of logistics coordinator

A. Unloading boats: gear should be in separate piles

B. Raft care includes:

   1. Washing - to remove sand and trash

   2. Drying - in the sun to prevent rot

   3. Deflate

C. Loading rafts: rafts should be well tied and loaded in bottom of trucks or trailers

D. Dunnage bags:

   1. Gear in separate piles for accurate count

   2. Gear should be dry

E. Food bags:

   1. Trash into garbage can or carried by vehicle to nearest disposal site

   2. All bags washed out

   3. Reuseable items in one or two bags to be recycled

F. Loading: load items that must be worked on near top of load

G. Permit: notify authorities of end of trip if necessary

XVII. SAFETY PROCEDURES

A. All trips must be led by a JCPS approved river specialist who is responsible for maintaining safety standards at all times for all boats on the trip.

B. A JCPS qualified rafting instructor must be present in each raft at all times while on the river and in or near the raft during loading and unloading procedures.

C. The rafting instructor should always be in a position such that he can assume immediate control of the boat in an emergency. Usually this would mean sitting at the rear of the boat, especially with inexperienced crews or in particularly dangerous rapids.

****In Westwater Canyon, the rafting instructor should remain in the rear of the boat through the rapids.*

D. Swimming in the river may be allowed by the river specialist subject to water temperature, air temperature, sunlight, wind, river current, upcoming rapids or any other condition that could endanger the swimmer. Swimmers must always wear a life jacket and be approved by the river specialist. Swimming in the rapids should only be allowed in minor rapids with no obstructions and with very easy exit means (consider that the swimmer may be very tired and not able to swim out of a strong current). An adult supervisor should be present at all times during swims of a rapid.

E. Off-river activities such as rock climbing, mud fights, etc., must be carefully supervised if allowed to occur at all. The danger of injury in a remote, inaccessible area must be of prime consideration and may require, in the judgement of the river specialist, that such activities be prohibited. We strongly recommend against rock climbing, mud fights and similar activities that could easily result in a serious injury.

F. The river specialist may set up special safety procedures for certain hazardous rapids such as Warm Springs, Hell's Half Mile and Skull Rapid or any others he deems appropriate.

G. A member of each trip should have the minimum of Red Cross Advance First-Aid training (40 hour minimum).

H. Safety policy: Policy of the Jefferson County Public Schools

1. The river specialist shall review safety rules with participants just prior to the trip.

2. The river specialist shall establish a serious tone at the onset of each trip and set an example of safety.

3. The river specialist shall check all life jackets prior to each trip and reject damaged ones.

4. The river specialist shall assign a lead boat and sweep boat prior to each trip.

   a. Lead boat shall not be passed

   b. Sweep boat shall have sweep box which contains:

      1) First-Aid box
      2) Repair kit
      3) Pump
      4) 150' of 7/16" rope

5. Rafting instructors shall be approved by river specialist and on the official JCPS approved list.

6. A pick up boat shall be stationed below each major rapid.

7. River specialist may require each participant to float in life jacket to realize power of river.

8. All new rivers shall be reconnaissanced before taking students on trip.

J. Safety rules: to be explained by river specialist prior to each trip

1. Life jackets shall be worn while on, in, or near the river.

2. Tennis shoes shall be worn while on or in the river and shoes worn on shore at all times.

3. No swimming in the river without life jacket and approval of river specialist. No diving or jumping from high cliffs into the river.

4. Rafting instructors are responsible for keeping the raft immediately following in sight at all times.

5. Review procedure for "Man Overboard": Swimmer floats on back, feet down stream, back stroking gently to retain stability.

6. Exposure or hyperthermia shall be explained briefly and emphasis on quick rescue given. Warning about expending energy in the water shall be given.

7. No loose lines on board. Explain how to tie up bowline.

XVIII. EMERGENCY PROCEDURES

While the procedure in an emergency depends on many factors (including location, weather, time, water level, etc.) and no hard and fast rules can be documented, some general guidelines are:

A. Man Overboard:

1. Get victim out of water as soon as possible
2. Expect to treat victim for hyperthermia
   a. Build a fire
   b. Put in sleeping bag (if warranted)
   c. Apply external heat if needed, warm between two bodies
   d. Change wet clothes
   e. If conscious drink hot liquids - tea, soup
3. Report incident to Environmental Education Office if victim was in river for abnormally long time or if other circumstances warrant. This report is for informational purposes only.

B. Raft tipover:

1. Go for the people first
2. Expect to treat victims for hyperthermia - see above
3. Tow boat or put crew on over-turned boat and proceed to shore
4. Assign one boat (or two if available) to pick up stray flotsam
5. Right raft, reinstate crew when recovered, and proceed
6. Written report of incident to Environmental Education Office for informational purposes

C. Injury or illness:

1. Give proper first-aid - make a note of all aid given and attach to victim
2. Evacuate to nearest appropriate escape route
3. Transport to nearest hospital facility (via ambulance if warranted)
4. Notify proper authorities (i.e., Park Service) immediately
5. Fill out an accident report to be filed with the school principal. This is a necessary procedure to help assure proper liability insurance coverage by the District. (Use Form #922)

Injury or illness (continued)

6. Fill out an incident report (P. 73 in Guide) and send to the Environmental Education Office. This is for informational purposes only.

D. Death:

1. Attempt to revive victim via first-aid methods

2. Body not found:

   a. Mark last seen spot

   b. Check in eddies and heads of islands for body

3. Body found:

   a. Wrap body carefully to prevent further injury or disfigurement to body

   b. Evacuate to nearest appropriate take out point

   c. Evacuate to nearest hospital

4. Report to Environmental Education Office, local authorities, including Park Service (if applicable) and police

5. Fill out all needed reports

6. Do not make any public statements until authorized to do so by School District authorities

7. Have local authorities or Environmental Education Office notify next of kin

E. Evacuation:

1. In the event of an emergency requiring evacuation by air, the symbol "X" or "SOS" marked or placed on the ground by any means (i.e., spreading of life jackets) will signify that help or emergency aid is necessary. Attempt to signal passing aircraft with signal panels, signal mirrors or radio.

F. Incident reports:

Any incidents resulting in personal injury requiring a physician's attention or property damage over $100 must be reported to the managing agency of the river and to the Jefferson County Public School Environmental Education Office.

XIX. SO NOW YOU WANT TO RUN A RIVER...

The following should help organize a river trip with students. Each step is important and approximate times of accomplishment are listed.

What To Do	When To Do It
1. Check for permit dates and availability: obtain a river trip request form from Environmental Education Office.	As early as possible. Permit dates are usually set by January before each rafting season.
2. Arrange for equipment and rental of anything you don't own (see list on pages 13 - 16.)	As soon as permit date is set.
3. Arrange for river specialist and any rafting instructors needed in addition to those on your own staff. Check that river specialist approves of your perspective rafting instructors	As soon as permit date is set.
4. Approximate cost of the trip: Considering: Equipment rental and/or purchase Travel expenses including shuttle Food expenses Substitute teachers and/or release time River specialist and rafting instructor honorariums	2-3 months in advance
5. Check plans with principal	2 months in advance
6. Recruit students (sample application on following pages)	2 months in advance
7. Fund raising (if desired)	2 months in advance
8. Organize river schedule, off-river activities and educational plan, set objectives	4-6 weeks before trip
9. Organize orientation meetings: (see page 20) for suggested topics). Sample schedule on following pages. We strongly urge you to include a parent orientation meeting in your pre-trip planning.	6 to 8 hours of orientation for all students prior to trip departure
10. Plan transportation	4-6 weeks early - more if using Jeffco buses
11. Set up raft groups	2-3 weeks early

What To Do	When To Do It
12. Plan menus and cooking duties (Sample menus and quantities for 32 people on following pages)	2-3 weeks early
13. Communicate with trip leader and rafting instructors regarding plans for trip; their responsibilities, etc.	2 weeks early
14. Collect final trip payments	2 weeks early
15. Collect all medical and release forms	1 week early
16. Order meat and bread for trip	1 week early
17. Check out school equipment to students	1 day before trip
18. Purchase food and pick up bread and frozen meat orders	1 day before trip
19. Check all students for adequate personal equipment	1 day before trip

The next five pages include specific information from the Wheat Ridge Biology Program. They are included for your information in case they may be helpful in your planning.

1975 BIOLOGY RIVER TRIPS

The Biology Department of Wheat Ridge High School plans to take students on four extended field trips and possibly four shorter trips during the months of May and June. We will take 27 students on each of two five-day field trips through the canyons of the Yampa and Green Rivers in Dinosaur National Monument in Colorado and Utah and 21 students on each of 2 6-day field trips through Desolation and Gray Canyons of the Green River in Utah. There will also be a series of weekend trips of one and two days during May on the Colorado River from near Radium (southwest of Kremmling) through State Bridge to Bond or on to Dotsero. More specific details on these will be announced later as our plans are finalized. All of these trips will be open to any student in biology with the only restrictions being that students who have previously participated in a biology river trip will not be accepted and only one trip per student will be allowed so that we can offer the experience to as many people as possible.

The first Dinosaur trip will begin after school (2:30) on Wednesday, May 21 and will return to Denver on Monday, May 26 after spending four days on the river and a day exploring Dinosaur by foot. The second Dinosaur trip will begin about 10 a.m. on Friday, June 6 and return to Denver on Wednesday, June 11. The cost for these 5 day trips will be $65.00.

The first Desolation trip will begin on Sunday, June 15 and return to Denver late on Saturday, June 21 after spending 5 days on the river. The second Desolation trip will begin Saturday, June 21 and return to Denver late on Friday, June 27. The cost for these 6 day trips will be $85.

The commercial companies that offer these same trips charge an average of $150 for the Dinosaur trip and over $200 for the Desolation trips. Our costs are kept low because these trips are run using equipment that has been purchased with funds raised by Wheat Ridge students over the last five years that we have been running the rivers.

Because of the unique nature of the trips, EACH student participant must agree to attend a series of orientation meetings covering such topics as river safety, rafting techniques, first-aid, biological, geological and historical orientations to the regions. Any students who do not attend these meetings will be dropped from the group and replaced with an alternate. These meetings will most likely be held one or two afternoons each week for one hour after school for three to five weeks before the trips. (Due to the presence of a 7th period at WRHS it may become necessary to hold the meetings in the morning before 1st period or in the evenings. We will attempt to accommodate the needs of the majority of the group if possible). One evening meeting which will not be required of the students will be held to acquaint parents with the aims and procedures of the trips.

All participants must be in good health and willing to spend five or six days in the wilderness away from all phases and comforts of society. Each student need only provide his own personal gear, the biology department has all the river gear, cooking equipment and sleeping bags, tents, etc.

ALL OR PART OF THE COST OF THE TRIP CAN BE EARNED BY THE STUDENT IF THEY DESIRE!!! Our fund-raising project will be a magazine sales campaign which has worked very successfully for the past three years. Several students have completely paid for their trip through the magazine sales commissions. Participation in the fund-raising will not be required if the student wishes to obtain the necessary funds by other methods.

Due to the severe limitation in the number of participants, we anticipate the use of a random drawing for selection of participants. Each student wishing to apply should return the completed application blank signed by his parents by Monday, April 7. Upon notification of selection for the trip on Tuesday, April 8, a $5 deposit must be made within the next four days. Full payment will be due by May 7 for the first Dinosaur trip; by May 23 for the second Dinosaur trip and by June 3 for the two Desolation trips.

1975 BIOLOGY RIVER TRIP APPLICATION

1. NAME _____ Soph. Junior Senior (Circle one)

2. BIOLOGY TEACHER _____ PERIOD _____

Which trip would you like to apply for? If you can go on more than one trip, number 1-2-3-4 in order of preference realizing that you cannot actually be selected for more than one trip.

1st Dinosaur trip	May 21 - May 26	_____
2nd Dinosaur trip	June 6 - June 11	_____
1st Desolation trip	June 15 - June 21	_____
2nd Desolation trip	June 21 - June 27	_____

4. Have you ever taken a river trip in Dinosaur? _____ If yes, with whom? _____

5. Have you ever taken a river trip in Desolation? _____ If yes, with whom? _____

6. Do you plan to sell magazines to raise money for the trip? _____

7. Would one or both of your parents be interested in providing transportation to the river and vacationing in the vicinity while the students are on the river? (We will reimburse part of the driving expense). You should also note that transportation is one of our major problems and having a parent willing to drive will be a significant factor in your possible selection to go on the trip.

_____ Yes _____ No _____ Maybe

8. If yes, which trip could they drive for? _____

9. If yes, how many students could ride with you? _____

STUDENT'S AGREEMENT:
I agree to attend all the orientation meetings, maintain the necessary safety procedures and, in general, work for a successful trip.

_____
Signature

PARENT'S APPROVAL:
I(we) give our consent for our son/daughter to apply for and, if accepted, participate in the Biology Department river trip.

_____
Signature

POSSIBLE RIVER TRIP MEETING SCHEDULE

#1 MEETING:	Names, addresses and phone numbers Equipment list Schedule of meetings Attendance policy at orientation meetings Fund raising campaign Medical forms Transportation plans Film summary of rafting
#2 MEETING:	Raft group assignments Equipment discussion and display Slides - summary of trips
#3 MEETING:	Food plans River manuals Slides - biology of canyons
#4 MEETING:	First-Aid Hypothermia - film "By Nature's Rules" Dangerous activities Evacuation and safety
#5 MEETING:	Geology and history of canyons Food handling and sanitation techniques
#6 MEETING:	River safety procedures Rafting techniques Equipment check-out Food purchase
LEAVE FOR RIVER:	Give accurate dates and times
FINAL TRIP PAYMENTS DUE:	Give dates and payee for checks

WHEAT RIDGE MENU

(Based on 32 people for four days)

BREAKFASTS:

1. 8 dozen eggs - scrambled
   64 sausage links
   11 oranges - cut in 1/4
   2 gallons tang
   1 package Swiss Miss
   Hot instant cereal
   Powdered milk - 1 qt.
   Brown and white sugar
   Instant coffe - cream - tea
   Raisins

2. 8 dozen eggs - scrambled (add 5 cans shrimp and one chopped onion)
   5 pounds fresh bacon
   5 #303 cans peaches
   1 package Swiss Miss
   2 gallons tang
   Powdered milk - 1 qt.
   Brown and white sugar
   Instant coffe - cream, tea
   Rasins

3. 12 grapefruit, cut 1/4
   2 gallons grape tang
   5 loaves sliced white bread (french toast)
   2 doz. eggs - mix with powdered milk, add cinnamon and vanilla
   64 fresh sausage links
   2 bottles syrup
   margarine
   Swiss Miss

4. 5 #303 cans pears
   2 gallons tang
   2 boxes pancake mix (add water only type)
   2 bottles syrup
   5 pounds bacon
   Margarine
   Swiss Miss

* * * *

XX. RAFTING INSTRUCTOR CRITERIA

1. One hundred and fifty (150) miles of experience on "major rivers" (Dinosaur, Desolation and Westwater). This experience may consist of one of the following or some other combination of 150 miles of paddle-boat experience.

(a)	Westwater	Minimum of three (3) runs plus a minimum of one (1) other trip experience on a major river.
(b)	Dinosaur	Yampa . . . . . Minimum of three (3) runs. LaDore . . . . Minimum of three (3) runs. Echo Park to Split Mountain..Minimum of five (5) runs.
(c)	Gray and Desolation	Minimum of three (3) runs.

Experience as the captain of the raft on each of the above trips is a prerequisite.

2. Updated Red Cross First Aid Card (multi-media is acceptable).

3. Twenty (20) years of age.

4. Utah Apprentice Boatman's license - required after January 1, 1976.

5. An on-river demonstration of the ability to "read" whitewater and take appropriate action in relation to:

   Currents, eddies, sleepers, holes, tongues, ferry position, landing, tie-up, instructional pattern for boat crew. This must be done in

the presence of a qualified Jeffco River Specialist (trip leader).

6. An on-trip demonstration of campsite techniques such as cooking, setting-up camp, boat loading and tie-in, clean-up and maintenance of equipment.

7. Demonstration of ability to arrange for and organize the "educational component" of the trip. This includes checking with the Environmental Education Office prior to the trip to see what activities are available through this office. The activities should include affective as well as cognative learnings. Ability and desire to interact with students effectively is essential.

8. Familiarity with and willingness to abide by the Jefferson County Safety Policy and Procedures Guide.

9. Willingness to abide by and implement the philosophy of the JCPS River program.

10. Approval of the Environmental Education Coordinator.

XXI. RIVER SPECIALIST CRITERIA

1. Five hundred (500) miles of paddle-boat experience on "major rivers" and at least one prior trip on the river to be traveled with students. It is essential that the specialist be familiar enough with the river to recognize landings, campgrounds, major rapids, water levels, etc.

2. Red Cross or comparable advanced First-Aid training.

3. Twenty-one (21) years of age.

4. Utah boatman's license - required after January 1, 1976.

5. Extensive experience in maintenance, repair and emergency procedures (resume will be required).

6. Approval of JCPS river committee and environmental education coordinator.

7. Agreement with and a willingness to abide by and enforce the policies, procedures and philosophy of the Jefferson County Public Schools.

XXII. SUGGESTED REFERENCE AND READING LIST FOR RIVER TRIP LEADERS AND PARTICIPANTS

Anasazi, Ancient People of the Rock, Donald G. Pike and David Muench/American West Publishing Co., 1974

**Ancient Landscapes of the Grand Canyon Region*, Edwin D. McKee

**Beyond the Hundredth Meridan*, Wallace Stegner/Houghton Mifflin Co.

**Broken Waters Sing*, Gaylord Staveley/Little Brown

**Canyonlands River Guide*, Bill and Buzz Belknap

A Canyon Voyage, Frederick S. Dellenbaugh/Yale University Press, 1926, 1962

**The Chew Bunch in Browns Park*, Avvon Hughel/Scrimshaw Press

**Common Wildflowers of the Grand Canyon*, John and Joanne Stockert/Wheelwright Press

**Delightful Journey Down the Green and Colorado Rivers*, Barry M. Goldwater/Ariz. Historical Foundation

**Desert Solitaire*, Edward Abbey/McGraw Hill

Desert Wildflowers, Edmund C. Jaeger/Stanford University Press, 1967

**Desolation River Guide*, Laura Evans and Buzz Belknap

Dinosaur Quarry - Dinosaur National Monument, John M. Good, Theodore White, and Gilbert F. Stucker/National Park Service, 1958

**Dinosaur River Guide*, Laura Evans and Buzz Belknap

**Down The Colorado*, Robert Brewster Stanton, Edited by Dwight L. Smith/Un. of Oklahoma Press

Down the Colorado, John Wesley Powell and Eliot Porter/Promontory Press, 1970

**Down the Colorado With Major Powell*, James Ramsey Ullman/Houghton Mifflin Co.

**Exploration of the Colorado River and its Canyons*, J.W. Powell/Dover Publications

Peterson Field Guide Series, Houghton Mifflin Company:

**Field Guide To Animal Tracks*, Olas J. Murie

**Field Guide to Rocky Mountain Wildflowers*, John and Frank Craighead with Ray Davis

**Field Guide to Western Birds*, Roger Tory Peterson

**Field Guide to Western Reptiles and Amphibians*, Robert C. Stebbins

*_Flowers of the Canyon Country_, Stanley L. Welsh and Bill Ratcliffe/Brigham Young University Press

Flowers of the Southwest Mesas, Pauline M. Patraw/Southwestern Monuments Assoc.

*_Geology and Natural History of the Grand Canyon Region_, Four Corners Geological Society

*_Geology of Canyonlands and Cataract Canyon_, D.L. Baars and C.M. Molenaar/Four Corners Geological Society

Geology of our Western National Parks and Monuments, Royle C. Rowe/Binfords and Mort, 1974

*_Geology of the Canyons of the San Juan River_, Edited by Wm. J. Breed/Museum of Northern Arizona and Grand Canyon Natural History Association

Geology, Our Changing Earth Through the Ages, Jerome Wyckoff/Golden Press, 1967

*_The Geologic Story of Canyonlands National Park_, S.W. Lohman/U.S. Geological Survey

Geologic Story of the Uinta Mountains, Wallace R. Hansen/ U.S. Geological Survey Bulletin 1291, 1969

*_The Grand Canyon_, Robert Wallace/Time-Life Books

Grand Canyon of the Living Colorado, Ernest Braun/Ballantine Books, 1970

*_Grand Canyon Perspectives_, W. Kenneth Hamblin and Joseph R. Murphy/Brigham Young University

*_Grand Canyon River Guide_, Buzz Belknap

*_Grand Canyon Treks_, Harvey Butchart/La Siesta Press

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**Powell of the Colorado*, William Culp Darrah/Princeton University Press

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Prehistoric Pectroglyphs and Pictographs in Utah, Edited by Roland Siegrist, Utah State Historical Society, 1972

River Rat's Guide to the Green and Yampa Rivers, Wheat Ridge High School

**River Running*, Verne Huser/Henry Regnery Co. (A good guide to planning and running a river trip)

River Runners Guides to the Canyons of the Green and Colorado Rivers with Emphasis on Geologic Features, Powell Society Ltd.:

**Dinosaur National Monument and Vicinity*, Phillip T. Hayes and George C. Simmons

**Desolation and Gray Canyons*, Felix E. Mutschler

**Marble Gorge and Grand Canyon*, George C. Simmons and David L. Gaskill

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A Sand County Almanac, Aldo Leopold/Oxford University Press, 1949

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*_Woman of the Rivers_, Rose Marie DeRoss/Gardner

All of the books marked with an asterisk are available from Westwater Books: Box 365, Boulder City, Nevada 89005. Write to them for a complete listing and prices. They maintain the most complete stock of river-rafting publications.

XXIII. INFORMATION ON RIVERS EXPLORED BY JEFFERSON COUNTY PUBLIC SCHOOLS

A. Colorado River from Gore Canyon to Sweetwater Creek (near Dotsero)

Location: Colorado. Southwest of Kremmling, beginning above Radium and running through State Bridge, Bond, Burns and ending above junction of I-70 and Dotsero.

Permit: No permit needed, some land along river bank is private and fenced, but much is open and apparently unrestricted as to use.

Logistics: Access to river is via paved road off Colorado Highway 9. Road turns off to the west, two miles south of Kremmling (turn-off) is just south of bridge over Colorado River. Road becomes gravel after several miles. When road descends from large hill, watch for gravel road to the right (if you get to Little Gore Canyon Ranch, you've gone too far). This road ends at an old D & RG pumphouse. No water, outhouses etc., are here.

Takeout --- First possible takeout is at State Bridge, approximately 15 miles. Then at Bond, about 5 miles further, then Texas Creek and finally a campground near Sweetwater Creek (Total about 30 miles).

Difficulty: When run in July - no problem, possible hazard at high water levels near a double bridge below Burns.

Camping: Few good sites, much private land is fenced. No water, outhouses, etc. most groups make 1-day trips only.

Escape and Emergency: River runs along D & RG tracks for entire distance and is frequently right along the road from Kremmling to Dotsero.

Comments: According to many people, this can be run beginning with spring run-off through October. A good 1-day or possibly 2 or 3-day introductory student trip, staff training, etc. Close to Denver and no permits make it desirable. NO MAPS available of river -- best map is U.S. Forest Service, 1973 edition, of White River National Forest.

B. Colorado River through Horsethief Canyon (just above Westwater Canyon)

Location:	Beginning at Loma, Colorado to Westwater Ranger Station.
Permit:	No permit needed until Westwater Ranger Station
Logistics	Gravel boat ramp at Loma, used by many commercial trips through Westwater, no exits until Westwater Ranch.
Difficulty:	No rapids, possibly some minor riffles at high water level.
Camping:	Many good camp sites along river, no facilities available.
Escape and Emergency:	River runs along D & RG tracks the entire route to Westwater Ranch.
Comments:	Provides 25-30 miles of river before Westwater. The canyon is beautiful but no white-water. At low water levels considerable paddling is involved to complete this section in 1½ days. Only available map is Colorado River strip map available in sections from USGS.

C. Green River from Flaming Gorge to Dinosaur National Monument

Location:	Utah and Colorado, on the Green River between Flaming Gorge Dam and the Gates of Ladore (see Dinosaur River Guide - Westwater Books).
Permit:	No advance permit needed. U.S. Forest Service may check out boats and equipment at Flaming Gorge put-on. No permit needed for rest of trip until Dinosaur National Monument.
Logistics:	Easy road access to boat ramp just below Flaming Gorge Dam. Other road access:

1) Little Hole Camp - mile 283 (see Dinosaur River Guide)
2) Indian Crossing Boat Ramp - mile 274
3) Swallow Canyon Boat Ramp - mile 263
4) Wildlife Refuge Boat Ramp - mile 252
5) Gates of Ladore - mile 244

Green River from Flaming Gorge to Dinosaur National Monument (Continued)

Difficulty: First seven miles through Red Canyon have several moderately difficult rapids. Red Creek rapid, mile 279, deserves to be looked over before running. No rapids in Brown's Park until Dinosaur National Monument.

Camping: Many excellent camp sites, some maintained by BLM with outhouses, no drinking water available.

Escape and Emergency: Possible at all access points listed under "logistics".

Comments: Red Canyon is a fun run, not difficult, the scenery is great. Brown's Park is very enjoyable if the group is conditioned for 34 miles of flat water. This 3-4 day trip is an ideal prelude to a 3-4 day run through Dinosaur. River completely mapped in Dinosaur River Guide - Westwater Books.

D. Green River through Desolation and Gray Canyons

Location: Utah, beginning at Ouray or Sand-Wash and ending at Green River, Utah (see Desolation River Guide - Westwater Books).

Permit: BLM, Utah Rivers Manager, currently no problem for private trips, commercial trips strictly regulated. No permit needed until Sand-Wash, mile 96.

Logistics: Easy road access from Ouray, Utah. Access to Sand-Wash via 47 miles rough gravel road beginning at Myton, Utah on U.S. 40 (this road may be impassible when wet).

- Easy takeout at Green River State Park boat ramp.

- Other takeout possible on private land at Diversion Dam at mile 8½. Contact:
  Mr. and Mrs. Hastings
  Box 246
  Green River, Utah
  Telephone: 564-3598

  in advance, for permission to take-out (fee required)

- Good take-out at Swasey's Rapid - mile 12 on river map (free)

Difficulty: No rapids from Ouray to Sand-Wash - 33 miles. First major rapid - 25 miles below Sand-Wash at mile 70.

Green River through Desolation and Gray Canyons (Continued)

When run in July, no problems, many rapids in the 70 miles but only one rapid, Three Fords Rapid at mile 37, was looked over before running. At higher water levels, several rapids could cause moderate difficulty and should be examined.

Camping: Many good sites but no facilities provided. Safe drinking water from stream usually available at Rock Creek Ranch - mile 54. Campsites should be selected in advance as registration of planned campsites is required upon check-in at BLM Ranger Station at Sand-Wash.

Escape and Emergency: This is the most remote and inaccessible Canyon of any run by JCPS trips. Upon leaving Sand-Wash there is only one inhabited area - a motel run by the Ute Indians at Florence Creek - mile 39½. There is a poor dirt road running along part of the river, but no traffic was observed on this road until shortly above Green River, Utah. The canyon should be regarded as totally remote with little or no possibility of outside assistance in an emergency. All groups must be aware of this and take precautions above and beyond those taken on other river trips. Medical aid is available at the clinic in Green River which is staffed by a nurse during normal hours. A doctor is present 2 or 3 mornings a week. Nearest hospital is at Price, Utah.

Comments: This canyon could be run basically anytime that Dinosaur can be run - extreme low water occurred in August resulting in the cancellation of some commercial trips. Best trips would probably be in May, June and early july. CAUTION - the mosquitoes from Ouray to approximately mile 70 are TERRIBLE, and an unprepared group could be very miserable!! This would be especially true in spring and early summer when the high water would prevent camping on sandbars in mid-river which offer some limited relief from the mosquitoes. Many side canyons offer interesting possibilities for off-river experience. Rock Creek Ranch is a fascinating deserted ranch well worth a half day of exploration. This trip should be considered for 5 days from Sand-Wash and 7 days from Ouray. The logistics are difficult and the remoteness could present problems in the event of an emergency. An excellent and accurate river map is available in Westwater Books - Desolation River Guide.

E. Colorado River through Westwater Canyon

Location:	Just across Utah state line on I-70. Beginning at Westwater Ranger Station to pump house at Cisco, Utah.
Permit:	Bureau of Land Management, Moab, Utah Office must be cleared through JCPS Environmental Education Office.
Logistics:	Access via gravel road marked "Ranch Exit" - 1st exit west of Utah state line on I-70. Good launch area and ramp. No water is available at put-in or in the canyon. No take-outs before Cisco pump house which has easy access by gravel road to Cisco and then to I-70.
Difficulty:	A quite difficult set of 12 rapids form the 4½ mile gorge of Westwater Canyon.
Camping:	Few campsites - by reservation at check-in point. Camping must be before the gorge - no campsites in the gorge and only 2 possible sites after the gorge - about 2 miles before the take-out point. No facilities or water available in canyon.
Escape and Emergency:	Almost no reasonable escape routes - only alternative is to run on out to Cisco. Nearest medical facilities are located in Grand Junction.
Comments:	This canyon presents unusual problems in that almost no whitewater exists before the gorge begins. Students get very little experience before encountering a very challenging and difficult set of rapids. This necessitates a more directive role on the part of the raft instructor to avoid potentially hazardous situations. This canyon should NOT be run in small paddle boats with more than about 12,000 cfs. flow. This usually limits the season to sometime after the middle of July through October, but seasonal flow variations may change these average dates.

XXIV. JEFFERSON COUNTY PUBLIC SCHOOLS

RIVER INCIDENT REPORT FORM

(This should be submitted to Environmental Education Office within 5 days after end of trip)

SCHOOL _____

River _____ Canyon Section _____

Trip Leader _____

School Trip Organizer _____ Trip Dates _____

Type of Incident (check)

a. _____ Boat flipping

b. _____ Injury

c. _____ Severe illness

d. _____ Other (describe)

_____

Date and Time of Incident _____

Location on River (pinpoint as accurately as possible using river miles from Westwater River Maps plus shore landmarks)

_____

_____

Complete description of the incident and possible causes of the incident

_____

_____

_____

Names of all students injured and description of injury

_____

_____

_____

Action and/or treatment taken by river staff _____

_____

_____

_____
Signature of school trip organizer